REMARKS

Reconsideration of this application and the allowance of rejected claims 1-3 and 5-7 are respectfully requested. Applicants have attempted to address all grounds for rejection in the Office Action dated May 13, 2009 (Paper No. 20090408) and believe that the application is now in condition for allowance. The Specification and Abstract have been amended to correct typographical and translational errors. Withdrawn claims 11, 21, and 23-24 have been amended to clarify the invention, correct typographical errors, and prevent loss of Applicants' right of rejoinder under MPEP § 821.04.

The specification stands objected to as failing to provide proper antecedent basis for the claimed subject matter. Specifically, the Examiner asserts that the use of the word "plot" in the specification does not provide proper antecedent basis for the word "terminal" as recited in the present claims. In response, Applicants have amended the Specification and Abstract to replace the word "plot" with the word "terminal." The error arose due to a mistranslation of the French word *borne*, which is used to specify points of a component which are in direct contact with something outside of the component. Applicants assert that no new subject matter is added through these amendments to correct obvious errors in the specification, since one of ordinary skill in the art would recognize not only that the word "plot" was used in error, but also that the word "terminal" was an appropriate correction (See MPEP § 2163.07(II); *In re Odd,* 443 F.2d 1200, 170 USPQ 268 (CCPA 1971)).

Claims 1, 3, and 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable of Ishikawa et al. (U.S. Patent No. 6,066,598) in view of Ahn et al. (U.S. Patent No. 5,834,405). Ishikawa is directed to a superconducting multilayer electrode for use in high-frequency bands including microwaves, decimillimetric waves, or millimetric waves, for use in devices such as high-frequency transmission lines, resonators, and filters (Ishikawa Col. 1, lns. 7-12). The electrode described in Ishikawa is made up of alternating layers of a thin-film superconductor and a thin-film dielectric (Col. 4, lns. 39-45). These devices require a high-frequency signal using alternating currents having a relatively low power, and generally have very small dimensions so they can be included into integrated circuits or chips. The object of Ishikawa is to raise a critical current density of the devices by improving resistance of a superconducting multilayer electrode (See Col. 1, lns. 58-62). In Ishikawa, the critical current density is limited by temperature elevation resulting from current intensity in the superconducting material, causing the material to no longer operate as a superconductor. That is, the goal of Ishikawa is to create a component that operates continuously in a superconducting mode.

In contrast, Ahn describes a superconducting substrate that operates (conducts electricity) in a superconducting mode when below a transition temperature and in a normal metallic conductor mode above the transition temperature (See Ahn Col. 1, lns. 40-50). The substrate is formed by embedding a metallic conductor in a ceramic dielectric oxide (Col. 7, lns. 8-11). Such a substrate is intended for use in a supercomputer that operates in a standby

mode at normal operating temperatures, but is converted to a supercomputer by cooling the substrate below the transition temperature (Col. 1, lns. 45-50). Accordingly, Applicants assert that Ahn must be intended to operate at frequencies generally consistent with those of computer boards (i.e., approximately 400 MHz, or 4×10^8 Hz), while the superconducting material described in Ishikawa is for use in the microwave frequency band (i.e., 10^{15} Hz), a frequency difference of a factor of approximately 10 million (10^7).

Further, as discussed above, Ishikawa teaches that the superconducting multilayer electrode is for use in integrated circuits or chips. In contrast, Ahn discloses that the superconducting substrate is used in larger-scale devices, such as computer motherboards. That is, while electrodes produced according to the disclosure of Ishikawa would typically be on the micrometer or even nanometer scale, superconducting substrates according to Ahn are typically on the millimeter or centimeter scale (See Ishikawa Col. 4, lns. 31-33 and Col. 6, lns. 1-2; Ahn, Col. 10, lns. 3-7 and Col. 11, lns. 26-29). Also, while the superconducting multilayer electrode of Ishikawa is made up of only superconductive and insulating material, Ahn teaches the use of additional metallic (i.e., conductive) material Additionally, while Ahn is designed to be operated either above or below the transition temperature, Ishikawa aims to raise electrical power while remaining below a transition temperature. For all these reasons, Applicants assert that one of ordinary skill in the art would not be motivated to combine the cited prior art references as suggested by the Examiner.

Moreover, assuming *arguendo* that one of ordinary skill would combine the cited prior art references, Ishikawa and Ahn still fail to disclose or suggest all the features recited in claim 1 of the present Application. Claim 1 requires that a stack of alternately superconducting and insulating layers be deposited onto a conducting or superconducting line segment incorporating at least one terminal. However, Ishikawa shows, in Fig 1that a stack of superconducting layers 1-5 and thin-film dielectrics 30 are deposited onto a dielectric layer 10, and not a conducting or superconducting layer.

Ahn describes a process of depositing a single ceramic dielectric oxide layer to a metallic conductor, and then drying and firing the coated conductor to produce a pellet including a superconducting oxide reaction layer (Ahn, Col. 5, lns. 46-53; Col. 6, lns. 17-24). That is, Ahn fails to disclose depositing a stack including alternating superconducting and insulating layers. Rather, Ahn simply discloses applying a single layer of ceramic dielectric oxide to a wire, then firing the component. Thus, Ishikawa and Ahn, whether taken alone or in combination, fail to disclose or suggest depositing a stack of alternately superconducting and insulating layers onto a line segment as recited in claim 1.

Accordingly, the rejection based on Ishikawa and Ahn is respectfully traversed. For at least the reasons identified above, Applicants respectfully submit that one of ordinary skill in the art would not have been motivated to combine the teachings of Ishikawa with those of Ahn. Thus, the rejection of claims 1, 3, and 5 should be withdrawn.

Further, Ishikawa teaches that the multilayered electrode is not directly connected to terminals 12 and 13. Instead, as shown in Fig. 1 of Ishikawa, a thin-film superconductor 5 is formed on a dielectric substrate 10. A first terminal 12 is then deposited on the substrate 10 such that a gap g1 is formed between the superconductor 5 and the first terminal (Ishikawa Col. 5, lns. 1-5). Similarly, a second terminal 13 is deposited on the substrate 10 such that a gap g2 is formed between the superconductor 5 and the second terminal 13 (Col. 5, lns. 6-11). Thus, the terminals 12 and 13 are electromagnetically coupled with the superconductor 5, but are not connected to the superconductor. More specifically, the coupling between each of the terminals 12, 13 and the superconductor 5 is capacitive coupling (Col. 5, lns. 11-15).

Applicants note that capacitive coupling, by definition, is only possible when there is no direct electrical connection between the capacitively coupled components. Accordingly, incorporating a terminal of the component into a line segment as recited in claim 1 of the present Application as proposed by the Examiner would prevent any capacitive coupling, thus preventing the device from functioning as described in Ishikawa. For this additional reason, Applicants again respectfully traverse the Examiner's rejection of claims 1, 3, and 5, and request withdrawal of the rejection.

Claim 2 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishikawa and Ahn, and further in view of Lee al., *Epitaxially Grown Sputtered $LaAlO_3$ Films* (hereinafter, "Lee"). Claim 2 depends from claim 1, and consequently includes all the

features of claim 1, plus additional features. Accordingly, Applicants traverse the rejection of claim 2 for the reasons identified above with respect to claim 1, and because Lee fails to remedy the deficiencies identified above with respect to the rejection of claim 1.

The Examiner cites Lee to disclose that $YBa_2Cu_3O_7$ and $LaAlO_3$ films can be crystallized. However, the reference does not provide any teaching, suggestion, motivation, or other reason for combining Ishikawa and Ahn. Accordingly, as discussed above with respect to the rejection of claim 1, one of ordinary skill in the art would not be motivated to combine the references cited by the Examiner in this rejection. For at least this reason, Applicants respectfully request that the rejection of claim 2 be withdrawn.

Claims 6 and 7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishikawa and Ahn, and further in view of Higaki et al. (U.S. Patent No. 5,219,827). Claims 6 and 7 ultimately depend from claim 1. Accordingly, claims 6 and 7 include the features of independent claim 1, plus additional features. Applicants traverse the rejection of claims 6 and 7 for the reasons recited above with respect to the rejection of claim 1.

Higaki is directed to a microwave resonator having a ground conductor partially composed of oxide superconductor material. The Examiner cites Higaki as disclosing an etching method. However, Higaki is silent regarding any motivation to combine the cited references. Accordingly, Applicants assert that, as discussed above, a person of ordinary skill in the art would not have been motivated to combine the references

cited by the Examiner. For this reason, Applicants respectfully request withdrawal of the rejection of claims 6 and 7.

In view of the above remarks, the application is respectfully submitted to be in allowable form. Allowance of the rejected claims is respectfully requested. Should the Examiner discover there are remaining issues which may be resolved by a telephone interview, he is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

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